

Epidemiology of Heart Failure

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Editorial

The expanding epidemic of heart failure necessitates the creation of easily accessible registries for patients with all types of CHF, especially those with severe heart failure. To completely grasp the natural history of this disease data from patients who were not enrolled in randomised studies must also be compiled. The increasing ageing of the US population will almost certainly result in a rise in the prevalence of heart failure and its economic burden. To better understand the demographics, risk factors, and natural history of diastolic dysfunction, approaches to consistently identify patients with systolic versus primary diastolic dysfunction must be developed.

Increased focus is definitely needed to better understand the demographics and risk factors for the development of CHF as well as to assist in the development of measures to reduce the disease's morbidity, mortality and economic impact. Through the activation of SIRT1 deacetylase, resveratrol may protect against metabolic illness. We hypothesise that polyphenol-activated SIRT1 acts upstream of AMPK signalling and hepatocellular lipid metabolism, because we recently identified AMPK activation as a key mechanism for polyphenols' beneficial effects on hepatic lipid accumulation. In diabetic mice, hepatic lipid build-up, hyperlipidemia and atherosclerosis were seen. According to this study, polyphenols like resveratrol and the synthetic polyphenol S17834 increase SIRT1 deacetylase activity, LKB1 phosphorylation at Ser428 and AMPK activation. Polyphenols dramatically lower AMPK and its downstream target, ACC (acetyl-CoA carboxylase) activation, FAS (Fatty Acid Synthase) expression and lipid accumulation in human HepG2 hepatocytes exposed to high glucose. Pharmacological and genetic suppression of SIRT1 reduces the advantages of polyphenols, implying that SIRT1 activity is essential for the stimulation of AMPK and the lipid-lowering effect of polyphenols.

Furthermore, both HepG2 cells and the mouse liver, adenoviral overexpression of SIRT1 enhance basal AMPK activation. SIRT1-mediated AMPK activation also protects against FAS production and fat build-up in the presence of high hyperglycaemia. Furthermore, polyphenols and SIRT1 both require LKB1, but not CaMKK, to activate AMPK. These findings imply that SIRT1 acts as a novel upstream regulator of LKB1/AMPK signalling and is important for hepatocyte lipid metabolism regulation. Polyphenols may have therapeutic implications for dyslipidemia and accelerated atherosclerosis in diabetes and age-related disorders by targeting SIRT1/LKB1/AMPK signalling. Nuclear stress testing is a well-known method for identifying coronary artery disease, predicting patient outcomes, and guiding management. Several evidence-based suitable indications and practise guideline recommendations for the use of Nuclear Stress Tests (NSTs) in a wide range of patients with known or suspected coronary disease have been published. The estimated 10 million NSTs performed each year. However, represent for more than 10% of the total ionising radiation burden faced by the US population. While one recent study noted that the risk of cancer from a single NST is minimal, it anticipated that NSTs could cause thousands of radiation-attributable malignancies annually, largely offsetting their advantages.

References

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